

**What is claimed is:**

1. A method comprising  
tracking effectiveness of page close messages to place banks of a memory in an appropriate state for subsequent memory transactions, and  
adapting generation of page close messages based upon the effectiveness of the page close messages.
2. The method of claim 1 further comprising  
generating a page-hit result that indicates whether a selected memory transaction targets the most recently opened page of a bank of the memory, and  
determining based upon the page-hit result and a current state of the bank whether a page close message for a previous memory transaction placed the bank in the appropriate state.
3. The method of claim 1 further comprising  
generating a page-hit result that indicates whether a selected memory transaction targets the most recently opened page of a bank of the memory, and  
determining that a page close message for a previous memory transaction did not place the bank in the appropriate state if the page-hit result indicates a page-hit access and the bank has no open pages.
4. The method of claim 1 further comprising  
generating a page-hit result that indicates whether a selected memory transaction targets the most recently opened page of a bank of the memory, and

determining that a page close message for a previous memory transaction did not place the bank in the appropriate state if the page-hit result indicates a page-miss access and the bank has another page open.

5. The method of claim 1 further comprising

generating a page-hit result that indicates whether a selected memory transaction targets the most recently opened page of a bank of the memory, and  
determining that a page close message for a previous memory transaction placed the bank in the appropriate state if the page-hit result indicates a page-hit access and the bank has the page open.

6. The method of claim 1 further comprising

generating a page-hit result that indicates whether a selected memory transaction targets the most recently opened page of a bank of the memory, and  
determining that a page close message for a previous memory transaction placed the bank in the appropriate state if the page-hit result indicates a page-miss access and the bank has no pages.

7. The method of claim 1 further comprising

determining based upon the effectiveness of page close messages that closing pages of the memory at a greater rate may increase perceived memory performance, and

adapting generation of page close messages to more aggressively close pages of the memory.

8. The method of claim 1 further comprising

determining based upon the effectiveness of page close messages that closing pages of the memory at a lesser rate may increase perceived memory performance, and

adapting generation of page close messages to more conservatively close pages of the memory.

9. An apparatus comprising  
a queue to store a plurality of memory transactions,  
page state logic to generate for the plurality of memory transactions page-hit results that indicate whether the plurality of memory transactions target the most recently opened pages of a memory, and

page close logic to adaptively generate, based upon the effectiveness of prior page close determinations, a page close message for a current memory transaction of the plurality of memory transactions that indicate whether to close a page of the memory targeted by the current memory transaction.

10. The apparatus of claim 9 further comprising a bank state register to store bank states that indicate whether the most recently opened page of the respective bank is open, wherein

the page close logic determines the effectiveness of prior page close determinations based upon the page-hit results and the bank states.

11. The apparatus of claim 9 wherein the page close logic comprises  
a first algorithm to generate page close determinations,  
a second algorithm to generate page close determinations, and

an algorithm selector to select a page close determination for a page close message from the first algorithm and the second algorithm based upon the effectiveness of prior page close determinations.

12. The apparatus of claim 9 wherein the page close logic comprises  
a first algorithm to generate page close determinations,  
a second algorithm to generate page close determinations, and  
an algorithm selector to update a count based upon the effectiveness of prior page close determinations and to select a page close determination for a page close message from the first algorithm and the second algorithm based upon the count.

13. The apparatus of claim 9 wherein the page close logic comprises  
a first algorithm to generate page close determinations,  
a second algorithm to generate page close determinations, and  
an algorithm selector to update a count based upon the effectiveness of prior page close messages and to switch from page close messages the first algorithm and the second algorithm in response to the count having a predetermined relationship to a threshold.

14. A system comprising  
a memory comprising at least one bank having a plurality of pages, and  
a memory controller to adaptively make a page close determination for a memory transaction based upon effectiveness of one or more prior page close determinations and to close a page accessed by the memory transaction based upon the page close determination.

15. The system of claim 14 further comprising a chipset that includes the memory controller.

16. The system of claim 14 further comprising a processor that includes the memory controller.

17. The system of claim 14 further comprising  
a chipset that includes the memory controller, and  
a processor that comprises a memory controller that adaptively makes another page close determination for the memory transaction based upon effectiveness of one or more prior page close determinations of the processor memory controller and that provides the chipset memory controller with the memory transaction and page close messages indicative of the another page close determination.

18. The system of claim 17 wherein the chipset memory controller makes the page close determination for the memory transaction based further upon the page close message of the processor.

19. A machine-readable medium comprising a plurality of instructions that, in response to being executed, result in a computing device

tracking effectiveness of page close messages to close pages of at least one bank of a memory to decrease page-empty accesses and to increase page-hit accesses to the at least one bank of the memory, and

adaptively generating, based upon the effectiveness of the page close messages, page close messages that indicate whether to close pages of the at least one bank.

20. The machine-readable of claim 19 medium wherein the plurality of instructions that further result in the computing device

generating a page-hit result for a memory transaction that indicates whether the memory transaction targets the most recently opened page of the at least one bank of the memory, and

determining that generation of the page close messages has been ineffective in response to the page-hit result indicating a page-hit access and a current state of the at least one bank indicating that the at least one bank has no open pages.

21. The machine-readable medium of claim 19 wherein the plurality of instructions that further result in the computing device

generating a page-hit result for a memory transaction that indicates whether the memory transaction targets the most recently opened page of the at least one bank of the memory, and

determining that generation of the page close messages has been ineffective in response to the page-hit result indicating a page-miss access and a current state of the at least one bank indicating that the at least one bank has at least one open page.

22. The machine-readable medium of claim 19 wherein the plurality of instructions that further result in the computing device

generating a page-hit result for a memory transaction that indicates whether the memory transaction targets the most recently opened page of the at least one bank of the memory, and

determining that generation of the page close messages has been effective in response to the page-hit result indicating a page-hit access and a current state of the at least one bank indicating that the at least one bank has at least one open page.

23. The machine-readable medium of claim 19 wherein the plurality of instructions that further result in the computing device

generating a page-hit result for a memory transaction that indicates whether the memory transaction targets the most recently opened page of the at least one bank of the memory, and

determining that generation of the page close messages has been ineffective in response to the page-hit result indicating a page-miss access and a current state of the at least one bank indicating the at least one bank has no open pages.